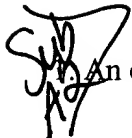


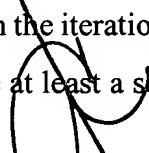
## CLAIMS

1  1. An occupied address discover system for use in connection with a computer, comprising:

2 A. an address inquiry message packet generator module configured to enable the computer to  
3 transmit address inquiry message packets over a network in one or more iterations, each  
4 address inquiry message packet including a network address, the address inquiry message  
5 packet generator module being configured to enable the computer to transmit address inquiry  
6 message packets for a selected number of network addresses during each iteration; and

7 B. an iteration control module configured to control the timing of successive iterations of  
8 transmission of address inquiry message packets by the computer in relation to reception by  
9 the computer of response message packets responding to the address inquiry message  
10 packets.

1 2. An occupied address discover system as defined in claim 1 in which the iteration control module  
2 is configured to control the timing of each successive iterations in relation to reception by the  
3 computer of response message packets responding to address inquiry message packets transmitted  
4 during each respective iteration.

1 3. An occupied address discover system as defined in claim 1 in which the iteration control module  
2 is configured to control the timing of successive iterations to provide at least a selected minimum  
3 time period for each iteration. 

1 4. An occupied address discover system as defined in claim 3 in which the iteration control module  
2 is further configured to provide an extended time period longer than the selected minimum time  
3 period if the computer receives at least one response message packet responding to the address  
4 inquiry message packets during the minimum time period.

1 5. An occupied address discover system as defined in claim 4 in which the iteration control module  
2 is further configured to provide the extended time period if the computer receives at least one  
3 response message packet responding to at least one of the address inquiry message packets which  
were transmitted by the computer during the iteration.

1 6. An occupied address discover system as defined in claim 3 in which the iteration control module  
2 is further configured to provide the extended time period as including at least one incremental time  
3 period following the minimum time period.

1 7. An occupied address discover system as defined in claim 6 in which the iteration control module  
2 is further configured to provide the extended time period comprising a further incremental time  
3 period if the computer receives at least one response message packet responding to the address  
4 inquiry message packets during the incremental time period.

1 8. An occupied address discover system as defined in claim 4 in which the iteration control module  
2 is further configured to provide the extended time period up to a selected maximum time period.

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1 9. An occupied address discover system as defined in claim 3 in which the iteration control module  
2 is configured to adjust the minimum time period in relation to an average round-trip time  
3 representative of a time delay between transmission of address inquiry message packets and  
4 reception of respective response message packets in response thereto.

1 10. An occupied address discover system as defined in claim 1 further comprising a response  
2 message packet reception module configured to, in response to reception by the computer of a  
3 response message packet in response to a respective one of the address inquiry message packets  
4 transmitted by the computer, generate an occupied address indication for the network address for the  
5 respective one of the address inquiry message packets.

1 11. An occupied address discover system as defined in claim 10 further comprising a selected  
2 characteristic discover module configured to perform a selected characteristic discover operation in  
3 connection with network addresses for which the response message packet reception module enables  
4 generation of an occupied address indication.

1 12. An occupied address discover system as defined in claim 11 in which one selected characteristic  
2 is whether a device connected in the network which uses a network address for which the occupied  
3 address indication was generated is using a port mapper.

1 13. A method of enabling a computer to discover occupied addresses, comprising the steps of:  
2 A. enabling the computer to transmit address inquiry message packets over a network in one or  
3 more iterations, each address inquiry message packet including a network address, in each

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iteration the computer being enabled to transmit address inquiry message packets for a selected number of network addresses during each iteration; and

- B. controlling the timing of successive iterations of transmission of address inquiry message packets by the computer in relation to reception by the computer of response message packets responding to the address inquiry message packets.

14. A method as defined in claim 13 in which the iteration control step includes the step of controlling the timing of each successive iterations in relation to reception by the computer of response message packets responding to address inquiry message packets transmitted during each respective iteration.

15. A method as defined in claim 13 in which the iteration control step includes the step of controlling the timing of successive iterations to provide at least a selected minimum time period for each iteration.

16. A method as defined in claim 15 in which the iteration control step includes the step of providing an extended time period longer than the selected minimum time period if the computer receives at least one response message packet responding to the address inquiry message packets during the minimum time period.

17. A method as defined in claim 16 in which the iteration control step includes the step of providing the extended time period if the computer receives at least one response message packet responding

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3 to at least one of the address inquiry message packets which were transmitted by the computer  
4 during the iteration.

1 18. A method as defined in claim 15 in which the iteration control step includes the step of providing  
2 the extended time period as including at least one incremental time period following the minimum  
3 time period.

19. A method as defined in claim 18 in which the iteration control step includes the step of providing  
the extended time period comprising a further incremental time period if the computer receives at  
least one response message packet responding to the address inquiry message packets during the  
incremental time period.

1 20. A method as defined in claim 16 in which the iteration control step includes the step of providing  
2 the extended time period up to a selected maximum time period.

1 21. A method as defined in claim 15 in which the iteration control step includes the step of adjusting  
2 the minimum time period in relation to an average round-trip time representative of a time delay  
3 between transmission of address inquiry message packets and reception of respective response  
4 message packets in response thereto.

1 22. A method as defined in claim 13 further a message packet reception step of, in response to  
2 reception by the computer of a response message packet in response to a respective one of the  
3 address inquiry message packets transmitted by the computer, enabling the computer to generate an

4 occupied address indication for the network address for the respective one of the address inquiry  
5 message packets.

1 23. A method as defined in claim 22 further comprising a selected characteristic discover step of  
2 enabling the computer to perform a selected characteristic discover operation in connection with  
3 network addresses for which the response message packet reception module enables generation of  
4 an occupied address indication.

1 24. A method as defined in claim 23 in which one selected characteristic is whether a device  
2 connected in the network which uses a network address for which the occupied address indication  
3 was generated is using a port mapper.

1 25. An occupied address discover computer program product for use in connection with a computer,  
2 comprising a computer-readable medium having encoded thereon:

3 A. an address inquiry message packet generator module configured to enable the computer to  
4 transmit address inquiry message packets over a network in one or more iterations, each  
5 address inquiry message packet including a network address, the address inquiry message  
6 packet generator module being configured to enable the computer to transmit address inquiry  
7 message packets for a selected number of network addresses during each iteration; and

8 B. an iteration control module configured to enable the computer to control the timing of  
9 successive iterations of transmission of address inquiry message packets by the computer in  
10 relation to reception by the computer of response message packets responding to the address  
11 inquiry message packets.

1 26. An occupied address discover computer program product as defined in claim 25 in which the  
2 iteration control module is configured to enable the computer to control the timing of each  
3 successive iterations in relation to reception by the computer of response message packets  
4 responding to address inquiry message packets transmitted during each respective iteration.

1 27. An occupied address discover computer program product as defined in claim 25 in which the  
2 iteration control module is configured to enable the computer to control the timing of successive  
3 iterations to provide at least a selected minimum time period for each iteration.

1 28. An occupied address discover computer program product as defined in claim 27 in which the  
2 iteration control module is further configured to enable the computer to provide an extended time  
3 period longer than the selected minimum time period if the computer receives at least one response  
4 message packet responding to the address inquiry message packets during the minimum time period.

1 29. An occupied address discover computer program product as defined in claim 28 in which the  
2 iteration control module is further configured to enable the computer to provide the extended time  
3 period if the computer receives at least one response message packet responding to at least one of  
4 the address inquiry message packets which were transmitted by the computer during the iteration.

1 30. An occupied address discover computer program product as defined in claim 27 in which the  
2 iteration control module is further configured to enable the computer to provide the extended time  
3 period as including at least one incremental time period following the minimum time period.

1 31. An occupied address discover computer program product as defined in claim 30 in which the  
2 iteration control module is further configured to enable the computer to provide the extended time  
3 period comprising a further incremental time period if the computer receives at least one response  
4 message packet responding to the address inquiry message packets during the incremental time  
5 period.

*Handwritten signature*  
1 32. An occupied address discover computer program product as defined in claim 28 in which the  
2 iteration control module is further configured to enable the computer to provide the extended time  
3 period up to a selected maximum time period.

1 33. An occupied address discover computer program product as defined in claim 27 in which the  
2 iteration control module is configured to enable the computer to adjust the minimum time period in  
3 relation to an average round-trip time representative of a time delay between transmission of address  
4 inquiry message packets and reception of respective response message packets in response thereto.

1 34. An occupied address discover computer program product as defined in claim 25 further  
2 comprising a response message packet reception module configured to enable the computer to, in  
3 response to reception by the computer of a response message packet in response to a respective one  
4 of the address inquiry message packets transmitted by the computer, generate an occupied address  
5 indication for the network address for the respective one of the address inquiry message packets.



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